



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/765,862

01/29/2004

Haruo Sawa

7345

2636

39196

7590

04/04/2007

SHLESINGER, ARKWRIGHT & GARVEY LLP  
1420 KING STREET  
SUITE 600  
ALEXANDRIA, VA 22314

EXAMINER

RUTHKOSKY, MARK

ART UNIT

PAPER NUMBER

1745

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
--	-----------	---------------

3 MONTHS

04/04/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/765,862

Applicant(s)

SAWA, HARUO

Examiner

Mark Ruthkosky

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 3/10/2004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

Art Unit: 1745

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

The information disclosure statement filed 3/10/2004 has been placed in the application file, and the information referred to therein has been considered as to the merits. The document of Notsu has been submitted in Japanese and cannot be considered.

A search of the prior art by the examiner has identified similar art that is authored by applicant. Applicant has not disclosed this art. Applicant is encouraged to present at least their other patents, pending applications and publications that correspond with the subject matter of the claimed invention.

### ***Drawings***

The drawings filed on 1/29/2004 have been approved.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 1745

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(c) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The instant claims are to a solid electrolyte including a complex compound which is composed of polyvinyl alcohol, water, and at least one inorganic compound selected from silicic acid compound, tungstic acid compound, molybdic acid compound, stannic acid compound, and zirconic acid compound, characterized by being produced by replacing a part or all of hydroxyl groups of polyvinyl alcohol domain to groups each of which has a water absorption less than that of said hydroxyl group.

The instant claims are to a product, a solid electrolyte. Applicant's claims include numerous process limitations that describe steps for making the electrolyte. These limitations have been considered, but are not given patentable weight. MPEP 2113 states, "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process."

Art Unit: 1745

Claims 1-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsudaira et al. (US 4,448,493.)

Matsudaira et al. (US 4,448,493) teaches a solid electrolyte including a complex compound which is composed of polyvinyl alcohol, water, and at least one inorganic compound selected from silicic acid compound, tungstic acid compound, molybdic acid compound, stannic acid compound, and zirconic acid compound, characterized by being produced by replacing a part or all of hydroxyl groups of polyvinyl alcohol domain to groups each of which has a water absorption less than that of said hydroxyl group (see col. 4, line 27 to col. 6, line 60.) Partially acetylated PVA is taught in col. 6, lines 45-60.) Silicic, stannic, and zirconic acid compounds are taught. Titanium compounds are also taught (col. 4, lines 25-35.) The acid materials may be mixed. The mixture forms a complex compound as the moieties interact forming complex structures, for example, by hydrogen bonding. Other materials are added to the electrolyte layer including inks (see the examples) and electrode materials (col. 3 and col. 6-8.) The electrolyte is used in an electrochromic device. Thus, the claims are anticipated.

Claims 1-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Sawa et al. (US 2003-007133.)

Sawa et al. (US 2003-007133) teaches a solid electrolyte including a complex compound which is composed of polyvinyl alcohol, water, and at least one inorganic compound selected from silicic acid compound, tungstic acid compound, molybdic acid compound, stannic acid compound, and zirconic acid compound, characterized by being produced by replacing a part or all of hydroxyl groups of polyvinyl alcohol domain to groups each of which has a water absorption less than that of said hydroxyl group (see paragraph, p, 21-41, claims 1-16.) PVA is

Art Unit: 1745

noted and may be modified with glycols, making PVA less water absorbing (p. 49.) Silicic acid compounds are taught. Other additives are taught. The mixture forms a complex compound as the moieties interact forming complex structures, for example, by hydrogen bonding (p. 27.) The electrolyte is used in a fuel cell (p. 25, 71.) Thus, the claims are anticipated.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsudaira et al. (US 4,448,493) OR Sawa et al. (US 2003-007133), as applied to claims 1-14 above, and further in view of Nakano et al. (US 5,409,785.)

The teachings of Matsudaira et al. (US 4,448,493) and Sawa et al. (US 2003-007133) have been presented. Matsudaira et al. (US 4,448,493) teaches the electrolyte used as ionic conductors in an electrochromic cell. Sawa et al. (US 2003-007133) teaches the electrolyte used as ionic conductors in fuel cells. The references do not teach the electrolytes taught to be used in a direct methanol fuel cell. Nakano et al. (US 5,409,785) teaches that direct methanol fuel cells are known to use PVA as electrolyte membranes (col. 5, lines 1-60; and claims 1-16.) It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the PVA based electrolytes taught in Matsudaira et al. (US 4,448,493) and Sawa et al. (US 2003-007133) in a direct methanol fuel cell in order to transfer ions. Direct methanol fuel cells are

Art Unit: 1745

well known to use PVA in order to transfer ions through the electrolyte. The artesian would have found the claimed invention to be obvious in light of the teachings of the references.

***Examiner Correspondence***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 571-272-1291. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:30.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free.)

Mark Ruthkosky

Primary Patent Examiner

Art Unit 1745

*Mark Ruthkosky*  
4.2.07